Procedure:13-6 - IT Development Procedures
Section:Information Technology Procedures
Office/Department: Office of IT Application Support & Development

Reports To: Information Technology
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IT Development Procedures

- GDOT will provide a VMWare virtual SharePoint Developer Environment (SPD) for the development activity to occur within. The SPD will reside in the consultants/contractors environment.
- Consultants will be responsible for providing licenses within their IT environment
- GDOT will be responsible for providing licenses within the GDOT IT environment
- Quality Assurance and User Acceptance Testing will occur in GDOT environments.
- GDOT's participation will focus on Review/Approval of the various components/deliverables
- Consultants will gather/document Requirements (functional and non-functional/technical/system requirements)
    - Based on business requirement specifications the consultant shall identify the potential risks or issues that need to be mitigated in the Architectural Design.
    - Expected levels of service, high availability architecture needs, business continuity (BC), and Disaster Recovery (DR) requirements shall be documented.
    - Freedom of Information Act (FOIA) and information security requirements (e.g. data encryption) shall be documented.
    - Consultants will work with the business steward to assess the risk of unauthorized alteration, unauthorized disclosure, or loss of the data for which the business steward is responsible and ensure, through the use of monitoring systems, that the GDOT is protected from damage, monetary or otherwise.
- Consultants will provide Business Requirements to GDOT for review/approval. This review/approval from GDOT will include Sponsoring Business Offices and the Division of Information Technology
- 5 – 10 days after Business Requirements have been provided to GDOT a preliminary architectural discussion will occur. This discussion will be a general approach based upon the Business Requirements, GDOT's Technical Standards, Current Department applications; this discussion must occur prior to commencement of any development activities. GDOT's IT Enterprise Architects must attend this discussion.
- Consultants will develop an Architectural Design for this development effort
- Consultants will present this Architectural Design to the Enterprise Architects for review/approval
    - Each requirement (e.g., hardware, software, user, operator interface, and safety) identified in the design specification shall be evaluated for accuracy, completeness, consistency, testability, and correctness. Design document shall be evaluated to verify that:
        - There are no internal inconsistencies among requirements;
        - All of the performance requirements for the system have been spelled out;
        - Fault tolerance, safety, and security requirements are complete and correct;
        - Allocation of software functions is accurate and complete; and
        - All requirements are expressed in terms that are measurable or objectively verifiable.
    - A software requirements traceability analysis shall be provided to trace software requirements to (and from) business/system requirements.
- Development Activities can commence after approval of the Architectural Design.
- The consultant shall provide logical and physical database schemas or designs to enterprise architects and DBA's for review/approval.
- Consultants will not have direct access to development or production database schemas or objects. All objects, tables, etc., that need to be created/altered should be scripted and provided to GDOT's database resource assigned to the project for implementation within GDOT.
- Consultant will perform Unit/System Testing in the SPD environment provided
- Consultant will perform UAT, QA/QC, and performance benchmark testing in GDOT's QA environments to ensure the application will work within GDOT's Environment; Coordination must occur to deploy the application to GDOT's QA environments. Deployment to GDOT's QA environments can only be accomplished by GDOT personnel.
- User Acceptance Testing will also occur within GDOT's QA Environments. Deployment to GDOT's QA environments can only be accomplished by GDOT personnel.

- Deployment to Production. Deployment to GDOT's Production environment can only be accomplished by GDOT personnel and must be scheduled in advance. Consultant shall indicate if deployment or upgrade can occur during business operation hours or if must be performed after business operation hours.

Expected Deliverables

- Requirements Document
- Architectural Design Document
  - System Design Overview: Includes program specifications developed in the planning phase of the project and description of the system/subsystem functions, and the logic flow of the entire system/subsystem in the form of a diagram.
  - Operational Environment: Includes operations, equipment, support software and interfaces.
  - Object Reference: Identifies and describes all program (/sub-program) and data objects developed.
  - Database Models: High level description of database design and goals
  - Entity Relationship Diagrams: All relationship diagrams for system Database Normalization: Description of normalization implementation
  - Stored Procedure Reference: All stored procedures are defined and described. Table Reference / Data Dictionary: All table layouts are defined with appropriate information (types, length, and size; identifying primary and foreign keys with all indexes). Document describing all fields by field name with description of information to be stored in data field.
  - Documented data owner and maintenance responsibility
  - Integration with other GDOT and external data sources: Describe the implementation of the system with the other departmental or external data sources. This includes logical descriptions of program functionality.
  - Security Reference
  - Define the security model utilized for the system, data source and users.
- Application (Code)
  - Programming Language Source Code: All source code of the system divided by module.
  - Stored Procedure Source Code: All transact SQL source code for all procedures, divided by procedure.
  - SQL Script Printout: All transact SQL source code for all scripts.
  - All scripts needed to build the database schema, procedures, and user permissions
  - Report Description: Description of each report. Included are reporting requirements, all input parameters and sample output.
  - Installation executables will be built from source in GDOT ClearCase repository.
- Datasets/Databases (as per GDOT policy/standards)
  - Scripts to build/alter database and associated objects and installation instructions
  - Entity Relationship diagrams
  - Data Dictionary
  - Metadata Registry
  - Deliverable datasets/databases
- Support Document
  - Overview: Detailed technician level instruction for supporting the developed system. Dependencies: Description of all required support software by operating system, operating system version, support software, support software version, and software location on server. Also includes all database, data warehouse, Geographic Information System (GIS), and web service dependencies.
  - Support roles, responsibilities, and procedures
  - Service/system monitoring (e.g. MOM/SCOM, SCCM) parameters for server or database administrators
  - Web application usage monitoring (e.g. Google Analytics)
  - Security protocols
- Deployment Document
  - Installation, configuration, and deployment instructions
  - Powershell Scripts for automated deployment will be provided for Windows Server based applications

SmartPhone Applications

- Currently GDOT uses Verizon as its cell phone carrier. No application will be developed which requires a cell phone that Verizon does not carry.
- For SmartPhone Applications which GDOT pursues it is assumed that the application will only work when the SmartPhone is within the carrier's coverage area.
- For SmartPhone Applications which are web browser based you will use HTML 5 and not the native operating system for the SmartPhone.
- For SmartPhone Applications that need native phone OS capabilities, the corresponding Mobile OS SDK will be used

APPENDIX A: Software/Hardware*

- Adobe LiveCycle ES 8 or higher
- Dundas Charts Web Parts 2.5
- Dundas Guages Web Parts 2.5
- Esri ArcGIS Desktop/Server 10.0 SP 5.0
- Esri Silverlight/WPF API 3.0 or HTML 5.0 and ArcGIS API for JavaScript 3.2
- Esri ArcGIS Mobile SDK 10.0 SP 5.0
- Esri ArcSDE Oracle 11.2.0.3 (64-bit) SDO Geometry
- HTML 5 (Standard for Smart Phone Applications) Windows Server 2008 R2 (64 bit)
- Linux Red Hat (RHEL) 5.3 (64-bit)
- Microsoft ASP.NET 2.0 or higher AJAX extensions 1.0
- Microsoft ASP.NET MVC 3.0 or higher
- Microsoft Expression Studio 4
- Microsoft FAST Search for SharePoint (FS4SP)
- Microsoft Internet Explorer 8 or higher
- Microsoft .NET 2.0. 3.0, 3.5, 4.0
- Microsoft Office 2007, Professional Plus
- Microsoft SharePoint 2010 Enterprise (64 bit) SharePoint Designer 2010
- Microsoft Silverlight 4.0
- Microsoft SQL Server Reporting Services 2008 R2 in SharePoint Integrated Mode
- Microsoft SQL Server 2008 R2
- Microsoft SQL Server 2008 R2 BIDS Add-On
- Microsoft Visual Studio 2010, Premium Edition
- Microsoft Windows 7, Enterprise Edition
- Microsoft Windows Mobile 6.5, Professional Edition
- Microsoft Windows Server 2008 R2 (64-bit), Enterprise Edition
- nHibernate 2.1
- Nintex Advanced Workflow Enterprise Edition (2010) 11101
- Oracle Client 11g R2 (64-bit)
- Oracle Database 11g R2 (64-bit)
- Oracle Gateway 11.2
- Quest Web Parts for SharePoint, 5.3
- SAP Crystal Reports 2011
- SAP Business Objects Data Services, Data Integrator XI, Premium Edition
- Trimble GeoExplorer 6000 series
- VMWare or HyperV server virtualization

*During architectural discussions, GDOT and the Consultant may agree to different solutions and different versions. All changes must be discussed and approved by GDOT IT.

References:

None

History:

added Enterprise Reporting and Data Warehouse requirements: 11/20/12;
initial version: 10/24/12